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EXAMINER

LE, DEBBIE M

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM ROMINE and ROSS DOERING

Appeal 2009-015303
Application 09/713,479
Technology Center 2100

Decided: May 10, 2010

Before LANCE LEONARD BARRY, ST. JOHN COURTENAY, III, and
JAMES HUGHES, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants seek our review under 35 U.S.C. § 134 of the Examiner's final decision rejecting claims 1-11, 19-25, 30, 32-37, 40, 41, and 49. Claims 12-18, 26-29, 31, 38, 39 and 42-48 have been cancelled.¹ We have jurisdiction over the appeal under 35 U.S.C. § 6(b). We Reverse.

¹ Claim 38 was cancelled by an amendment entered on May 9, 2006 under the provisions of 37 C.F.R. § 41.33(b)(1).

Invention

Appellants' invention relates in general to the reorganization of database objects while maintaining the availability of those objects to applications or users. In particular, the invention on appeal is directed to preventing data modification operations to an object within a database during one or more structural changes to the object. (Spec. 1).

Claim 1 is illustrative:

1. A method of reorganizing a table in a database file while providing clients of the database file continuous access to data stored in the table, the method comprising:
 - reorganizing data of an original table by copying the data to a reorganized table;
 - during the copying, allowing modifications to the data of the original table while collecting records of the modifications;
 - when the copying completes, applying the modifications from the collected records against the reorganized table;
 - applying a first partial lock to the original table, the first partial lock blocking select data modification operations against the original table while allowing other operations against the original table;
 - applying any remaining modifications from the collected records against the reorganized table;
 - applying a second partial lock to the reorganized table, the second partial lock blocking select data modification operations against the reorganized table while allowing other operations against the reorganized table during the

reorganization such that the reorganized table remains continuously accessible during the reorganization;

substituting the reorganized table for the original table such that the reorganized table remains accessible while substituting the reorganized table for the original table; and

removing the second partial lock, wherein additional more-restrictive locks to the original table are not needed during the method of reorganizing the original table, thereby providing clients of the original table continuous access to the data during the reorganization through at least the other operations allowed by the first partial lock.

THE REJECTIONS

1. The Examiner rejected claims 1, 3-7, 9-11, 19-23, 30, 32-36, 40 and 49 under 35 U.S.C. § 103(a) as unpatentable over the combination of Friske (U.S. Pat. 6,519,613) and Vagnozzi (U.S. Pat. 6,499,033).
2. The Examiner rejected claims 2, 8, 21, 24, 25, 37, and 41 under 35 U.S.C. § 103(a) as unpatentable over the combination of Friske (U.S. Pat. 6,519,613), Vagnozzi, and Pereira (U.S. Pat. 6,122,640).

ISSUE

Based upon our review of the administrative record, we have determined that the following issue is dispositive in this appeal:

Under § 103, did the Examiner err by finding that the cited references would have taught or suggested applying two partial locks during a

reorganization process that keeps a reorganized table accessible while substituting the reorganized table for an original table? (Claim 1; *see* commensurate limitations recited in each independent claim).

FINDINGS OF FACT

1. Friske teaches:

In one embodiment, the invention may be implemented to provide a method to reorganize a database that does not prevent other processes from accessing the database while the reorganization is in progress. The method uses a non-blocking drain to lock on an original database or "resource", unloads data to be reorganized from the resource, assigns a LRSN, reorganizes the copied data, and loads it into a shadow location. Log records may be used to adjust the data in the shadow location to account for changes to resource data that occurred after the data was unloaded. Lastly, the data in the resource is replaced with the reorganized data.

(Col. 3, ll. 4-14).

2. Friske teaches:

Following a reorganization request, a "non-blocking" drain in task 404 places a lock on a new target data set contained in the database 122. The non-blocking drain does not acquire a "traditional" lock on the target data set, wherein a lock is generally understood to be a serialization mechanism by which a data set is restricted for use only by the holder of the lock. With the non-blocking drain, any requests to access the target data set will not be blocked although the sequence in which a lock was requested is still recorded. This allows other processes that need to use the target data set to access the

data set even when the reorganization process is taking place.

(Col. 6, ll. 56-67).

3. Friske teaches that for a brief time during the replacement step, “neither the original nor the reorganized data is accessible by a process request.” (Col. 9, ll. 16-19).

4. According to one disclosed embodiment, Vagnozzi teaches the use of a shared-lock (reader lock) only during a query process that “allows any number of other retrieval operations on the table to proceed concurrently, while temporarily locking out update operations.” (Col. 15, ll. 25-29).

ANALYSIS

The Appellants argue, *inter alia*, that none of the cited references teach or suggest applying two partial locks during a reorganization process and keeping a reorganized table accessible while substituting the reorganized table for an original table. (App. Br. 14-16).

Based upon our review of the record, we agree with Appellants for the reasons discussed *infra*.

We begin our analysis by noting that the primary Friske reference teaches a method of reorganizing a database that does not prevent other processes from accessing the original database while the reorganization is in progress. (FF 1). In particular, Friske’s method uses a type of lock referred

to as a “non-blocking drain” to lock on an original database or resource, whereby data is unloaded to be reorganized from the resource and the copied data is subsequently reorganized and loaded into a shadow location. (*Id.*).

Thus, at the outset we find Friske’s approach to database reorganization to be inapposite to Appellants’ claimed method that is directed to “allowing other operations against the reorganized table during the reorganization such that the reorganized table remains continuously accessible during the reorganization” (Claim 1). In addition, we find Friske’s “non-blocking drain” cannot reasonably be considered a “partial lock” within the meaning of Appellants’ independent claims because Friske expressly teaches that “[w]ith the non-blocking drain, any requests to access the target data set will not be blocked although the sequence in which a lock was requested is still recorded.” (FF 2, underline added).

Lastly, we note that Friske teaches that for a brief time during the replacement step, “neither the original nor the reorganized data is accessible by a process request.” (FF 3, underline added). Thus, we find Friske alone does not meet Appellants’ claimed requirement “that the reorganized table remains continuously accessible during the reorganization,” in addition to the Friske reference’s aforementioned shortcomings regarding the recited first and second partial locks. (Claim 1, underlined added).

Therefore, we agree with Appellants that Friske teaches the opposite of keeping a reorganized table accessible while substituting the reorganized table for an original table. *See* App. Br. 16: “In particular, the Friske patent states that, while replacing an original data set with a reorganized data set, ‘neither the original nor the reorganized data is accessible’ (see, e.g., col. 9, lines 16-19; see also the Abstract).”

Regarding the shortcomings of the primary Friske reference, the Examiner admits the following:

Friske does not explicitly teach applying a first partial lock, the first lock blocking select data modification operations against the original table while allowing other operations against the original table; applying a second partial lock, the second lock blocking select data modification operations against the reorganized table while allowing other operations against the reorganized table during the reorganization such that the reorganization table remain, the reorganized table remains accessible while substituting the reorganized table for the original table.

(Ans. 5).

Thus, the Examiner looks to the secondary Vagnozzi reference for the aforementioned teachings admitted to be missing from the primary Friske reference.

In the Response to Arguments section of the Answer, the Examiner contends: “[a]lthough Vagnozzi teaches ‘permit[ting] fields to be added to the database without having to reorganize the database’ (col. 2, lines 63-64), [] by the mean[ing] of adding new fields to the database, it would be equivalent to the ‘reorganization’ of the database because the structure of database has been changed with newly added fields.” (Ans. 16, ¶1).

We do not find the Examiner’s reasoning to be persuasive. As pointed out by Appellants (App. Br.15), we particularly note that the Examiner’s finding regarding Vagnozzi (at column 2) is taken from the “Background of the Invention” section and refers to another patent (U.S. Pat. No. 4,606,002 to Waisman et al., *see* Vagnozzi col. 2, l. 12). While we agree with the Examiner that Vagnozzi teaches the use of at least one partial

lock (FF 4: “shared-lock (reader lock)”), we nevertheless find that the weight of the evidence supports the Appellants’ position that the Vagnozzi patent, when combined with Friske, does not fairly teach or suggest the use of multiple partial locks on different tables during a reorganization process that keeps a reorganized table accessible while substituting the reorganized table for an original table, within the meaning of the commensurate limitations recited in each independent claim before us on appeal.

Therefore, we reverse the Examiner’s § 103 rejection of independent claims 1, 19, 22, 30, 35, and 40. Because we have reversed the Examiner’s rejection of each independent claim on appeal, we also reverse the Examiner’s § 103 rejections of each dependent claim on appeal.

DECISION

We reverse the Examiner’s decision rejection claims 1-11, 19-25, 30, 32-37, 40, 41, and 49 under § 103.

ORDER

REVERSED

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